AMENDMENTS TO THE CLAIMS

1. (Currently amended) Grinding media shaped suitable for milling product in a media mill, comprising a multi-carbide material which includes carbon and at least two different carbide-forming metal elements wherein said multi-carbide material is formed into shaped grinding media ranging in size from 0.5 micron to 100 mm ~~in diameter~~.

2. (Original) Grinding media according to claim 1, wherein said carbide-forming metal elements are selected from the group consisting of chromium, hafnium, molybdenum, niobium, rhenium, tantalum, thallium, titanium, tungsten, vanadium, and zirconium.

3. (Currently amended) Grinding media according to claim 1, wherein said grinding media comprises a multi-carbide material consisting essentially of carbon and at least two different carbide-forming metal elements wherein said multi-carbide material is formed into shaped grinding media ranging in size from 0.5 micron to 100 mm ~~in diameter~~.

4. (Currently amended) Grinding media according to claims 1, 2, or 3 wherein said multi-carbide material further includes a carbide-forming metal element in its elemental state.

5. (Currently amended) Grinding media according to claims 1, 2, or 3 wherein said multi-carbide material further includes at least one of said carbide-forming metal elements of said multi-carbide material in its elemental state.

6. (Original) Grinding media according to claim 1, wherein said grinding media consists essentially of titanium, tungsten, and carbon, in the ratios of from about 10 to 90 at% tungsten, from about 2 to 97 at% titanium, and the balance carbon.

7. (Original) Grinding media according to claim 1, wherein said grinding media consists essentially of about 10 to 40 at% carbon; from about 5 to 50 at% titanium, and the balance being tungsten.

8. (Original) Grinding media according to claim 1, further comprising

a multi-carbide material consisting essentially of from about 10 to 40 at% carbon, from about 5 to 50 at% titanium, and the balance being tungsten; and

at least one material taken from the group consisting of molybdenum, chromium, and rhenium;

wherein said at least one material is in an amount from 0 to about 20 at%, with the tungsten remaining in the composition being not less than 10 at%.

9. (Original) Grinding media according to claim 1, comprising a multi-carbide material consisting essentially of from about 20 to 30 at% carbon; from about 5 to 50 at% titanium; from about 0 to 30 at% of at least a first material from the group consisting of rhenium, zirconium, hafnium and molybdenum; from about 0 to 10 at% of at least a second material taken from the group consisting of vanadium, niobium and tantalum; from about 0 to 20 at% chromium; with the balance, but not less than 10 at%, being tungsten.

10. (Original) Grinding media according to claim 1, comprising a multi-carbide material consisting essentially of:

(a) from about 15 to 60 at% titanium and first alloying substituents, wherein said first alloying substituents consist of hafnium, niobium, tantalum and zirconium; and wherein titanium, titanium and niobium, or titanium and niobium and tantalum are present from 0 to 20 at%; wherein titanium or titanium and zirconium are present from about 0 to 10 at%; and wherein titanium or titanium and hafnium are present from about 0 to 30 at%; and the balance, if any, being titanium;

(b) from about 3 to 47 at% tungsten and second alloying substituents, wherein said second alloying substituents consist of chromium, molybdenum, vanadium, tantalum and niobium; wherein tungsten or tungsten and chromium are present from about 0 to 5 at%; wherein tungsten or tungsten and molybdenum are present from about 0 to 25 at%; wherein tungsten or tungsten and vanadium are present from about 0 to 5 at%; and wherein tungsten, tungsten and tantalum, tungsten and niobium, or tungsten and tantalum and niobium are present from about 0 to 20 at%; and the balance, if any, being tungsten;

(c) carbon from about 30 to 55 at%;

(d) wherein the atomic percentages of niobium and tantalum, each alone or in combination, never exceed 20 at%; and

(e) wherein the total at% of all constituents is 100 at%, all of the constituents of the alloy being of normal commercial purity.

11. (Original) Grinding media according to claims 1, 2, 3, 6, 7, 8, 9, or 10 , wherein said shaped media are shaped as spheres.

12. (Currently amended) A method for making grinding media, comprising the step of forming said media from a multi-carbide material which includes carbon and at least two different carbide-forming metal elements wherein said multi-carbide material is formed as grinding media shaped suitable for milling product ~~for use~~ in a media mill.

13. (Currently amended) A method according to claim 12, wherein said carbide-forming metal elements are selected from the group consisting of chromium, hafnium, molybdenum, niobium, rhenium, tantalum, thallium, titanium, tungsten, vanadium, and zirconium.

14. (Currently amended) A method according to claims 12 or 13 wherein said multi-carbide material further includes a carbide-forming metal element in its elemental state.

15. (Currently amended) A method according to claims 12 or 13 wherein said multi-carbide material further includes at least one of said carbide-forming metal elements of said multi-carbide material in its elemental state.

16. (Original) A method according to claim 12, wherein said media consists essentially of titanium, tungsten, and carbon, in the ratios of from about 10 to 90 at% tungsten, from about 2 to 97 at% titanium, and the balance carbon.

17. (Original) A method according to claim 12, wherein said media consists essentially of about 10 to 40 at% carbon; from about 5 to 50 at% titanium, and the balance being tungsten.

18. (Original) A method according to claim 12, wherein said media comprises:

a multi-carbide material consisting essentially of from about 10 to 40 at% carbon, from about 5 to 50 at% titanium, and the balance being tungsten; and

at least one material taken from the group consisting of molybdenum, chromium, and rhenium;

wherein said at least one material is in an amount from 0 to about 20 at%, with the tungsten remaining in the composition being not less than 10 at%.

19. (Original) A method according to claim 12, wherein said media comprises a multi-carbide material consisting essentially of from about 20 to 30 at% carbon; from about 5 to 50 at% titanium; from about 0 to 30 at% of at least a first material from the group consisting of rhenium, zirconium, hafnium and molybdenum; from about 0 to 10 at% of at least a second material taken from the group consisting of vanadium, niobium and tantalum; from about 0 to 20 at% chromium; with the balance, but not less than 10 at%, being tungsten.

20. (Original) A method according to claim 12, wherein said media comprises a multi-carbide material consisting essentially of:

(a) from about 15 to 60 at% titanium and first alloying substituents, wherein said first alloying substituents consist of hafnium, niobium, tantalum and zirconium; and wherein titanium, titanium and niobium, or titanium and niobium and tantalum are present from 0 to 20 at%; wherein titanium or titanium and zirconium are present from about 0 to 10 at%; and wherein titanium or titanium and hafnium are present from about 0 to 30 at%; and the balance, if any, being titanium;

(b) from about 3 to 47 at% tungsten and second alloying substituents, wherein said second alloying substituents consist of chromium, molybdenum, vanadium, tantalum and niobium; wherein tungsten or tungsten and chromium are present from about 0 to 5 at%; wherein tungsten or tungsten and molybdenum are present from about 0 to 25 at%; wherein tungsten or tungsten and vanadium are present from about 0 to 5 at%; and wherein tungsten, tungsten and tantalum, tungsten and

niobium, or tungsten and tantalum and niobium are present from about 0 to 20 at%; and the balance, if any, being tungsten;

(c) carbon from about 30 to 55 at%;

(d) wherein the atomic percentages of niobium and tantalum, each alone or in combination, never exceed 20 at%; and

(e) wherein the total at% of all constituents is 100 at%, all of the constituents of the alloy being of normal commercial purity.

21. (Currently Amended) A method according to claims 12, 13, 16, 17, 18, 19, or 20, further comprising the step of forming said media into shaped media ranging in size from 0.5 micron to 100 mm ~~in diameter~~.

22. (Original) A method according to claims 12, 13, 16, 17, 18, 19, or 20, further comprising the step of forming said media into spheres ranging in size from 0.5 micron to 100 mm in diameter.

23-59. (Cancelled)

60. (Currently amended) A method for milling a product in a media mill, comprising the step milling a product in a media mill ~~of~~ using media ~~consisting essentially of~~ comprising a multi-carbide material which includes carbon and at least two carbide-forming metal elements ~~wherein said multi-carbide is formed as media for use in a media mill~~.

61. (Currently amended) A method according to claim 60, wherein said carbide-forming metal elements are selected from the group consisting of chromium, hafnium, molybdenum, niobium, rhenium, tantalum, thallium, titanium, tungsten, vanadium, and zirconium.

62. (Currently amended) A method according to claims 60 or 61 wherein said multi-carbide material further includes a carbide-forming metal element in its elemental state.

63. (Currently amended) A method according to claims 60 or 61 wherein said multi-carbide material further includes at least one of said carbide-forming metal elements of said multi-carbide material in its elemental state.

64. (Original) A method according to claim 60, wherein said media consists essentially of titanium, tungsten, and carbon, in the ratios of from about 10 to 90 at% tungsten, from about 2 to 97 at% titanium, and the balance carbon.

65. (Original) A method according to claim 60, wherein said media consists essentially of about 10 to 40 at% carbon; from about 5 to 50 at% titanium, and the balance being tungsten.

66. (Original) A method according to claim 60, wherein said media comprises:

a multi-carbide material consisting essentially of from about 10 to 40 at% carbon, from about 5 to 50 at% titanium, and the balance being tungsten; and

at least one material taken from the group consisting of molybdenum, chromium, and rhenium;

wherein said at least one material is in an amount from 0 to about 20 at%, with the tungsten remaining in the composition being not less than 10 at%.

67. (Original) A method according to claim 60, wherein said media comprises a multi-carbide material consisting essentially of from about 20 to 30 at% carbon; from about 5 to 50 at% titanium; from about 0 to 30 at% of at least a first material from the group consisting of rhenium, zirconium, hafnium and molybdenum; from about 0 to 10 at% of at least a second material taken from the group consisting of vanadium, niobium and tantalum; from about 0 to 20 at% chromium; with the balance, but not less than 10 at%, being tungsten.

68. (Original) A method according to claim 60, wherein said media comprises a multi-carbide material consisting essentially of:

(a) from about 15 to 60 at% titanium and first alloying substituents, wherein said first alloying substituents consist of hafnium, niobium, tantalum and zirconium; and wherein titanium, titanium and niobium, or titanium and niobium and tantalum are present from 0 to 20 at%; wherein titanium or titanium and zirconium are present from about 0 to 10 at%; and wherein titanium or titanium and hafnium are present from about 0 to 30 at%; and the balance, if any, being titanium;

(b) from about 3 to 47 at% tungsten and second alloying substituents, wherein said second alloying substituents consist of chromium, molybdenum, vanadium, tantalum and niobium; wherein tungsten or tungsten and chromium are present from about 0 to 5 at%; wherein tungsten or tungsten and molybdenum are present from about 0 to 25 at%; wherein tungsten or tungsten and vanadium are present from about 0 to 5 at%; and wherein tungsten, tungsten and tantalum, tungsten and niobium, or tungsten and tantalum and niobium are present from about 0 to 20 at%; and the balance, if any, being tungsten;

(c) carbon from about 30 to 55 at%;

(d) wherein the atomic percentages of niobium and tantalum, each alone or in combination, never exceed 20 at%; and

(e) wherein the total at% of all constituents is 100 at%, all of the constituents of the alloy being of normal commercial purity.

69. (Original) A method according to claims 60, 61, 64, 65, 66, 67, or 68, further comprising the step of forming said media into shaped media ranging in size from 0.5 micron to 100 mm in diameter.

70. (Original) A method according to claims 60, 61, 64, 65, 66, 67, or 68, further comprising the step of forming said media into spheres ranging in size from 0.5 micron to 100 mm in diameter.

71-76. (Cancelled)

77. (New) Grinding media according to claim 1, wherein the grinding media has a size of less than 500 micron.

78. (New) Grinding media according to claim 1, wherein the grinding media has a density of greater than 8 gm/cc.

79. (New) Grinding media having a substantially spherical shape and suitable for milling product in a media mill, the grinding media comprising a multi-carbide material which includes carbon and at least two different carbide-forming metal elements.

80. (New) Grinding media according to claim 79, wherein said carbide-forming metal elements are selected from the group consisting of chromium, hafnium, molybdenum, niobium, rhenium, tantalum, thallium, titanium, tungsten, vanadium, and zirconium.

81. (New) Grinding media according to claim 79, wherein said grinding media comprises a multi-carbide material consisting essentially of carbon and at least two different carbide-forming metal elements.

82. (New) Grinding media according to claim 79, wherein the grinding media has a size of less than 500 micron.

83. (New) Grinding media according to claim 79, wherein said multi-carbide material further includes a carbide-forming metal element in its elemental state.

84. (New) Grinding media according to claim 79, wherein said multi-carbide material further includes at least one of said carbide-forming metal elements of said multi-carbide material in its elemental state.

85. (New) Grinding media according to claim 79, wherein said grinding media consists essentially of titanium, tungsten, and carbon, in the ratios of from about 10 to 90 at% tungsten, from about 2 to 97 at% titanium, and the balance carbon.

86. (New) Grinding media according to claim 79, wherein said grinding media consists essentially of about 10 to 40 at% carbon; from about 5 to 50 at% titanium, and the balance being tungsten.

87. (New) Grinding media according to claim 79, wherein the grinding media has a density of greater than 8 gm/cc.

88. (New) Grinding media shaped suitable for milling product in a media mill, comprising a multi-carbide material which includes carbon and at least two different carbide-forming metal elements wherein the grinding media has a size of less than 500 micron.

89. (New) Grinding media according to claim 88, wherein said carbide-forming metal elements are selected from the group consisting of chromium, hafnium, molybdenum, niobium, rhenium, tantalum, thallium, titanium, tungsten, vanadium, and zirconium.

90. (New) Grinding media according to claim 88, wherein said grinding media comprise a multi-carbide material consisting essentially of carbon and at least two different carbide-forming metal elements.

91. (New) Grinding media according to claim 88, wherein the grinding media has a size of greater than 0.5 micron.

92. (New) Grinding media according to claim 88, wherein said multi-carbide material further includes a carbide-forming metal element in its elemental state.

93. (New) Grinding media according to claim 88, wherein said multi-carbide material further includes at least one of said carbide-forming metal elements of said multi-carbide material in its elemental state.

94. (New) Grinding media according to claim 88, wherein said grinding media consists essentially of titanium, tungsten, and carbon, in the ratios of from about 10 to 90 at% tungsten, from about 2 to 97 at% titanium, and the balance carbon.

95. (New) Grinding media according to claim 88, wherein said grinding media consists essentially of about 10 to 40 at% carbon; from about 5 to 50 at% titanium, and the balance being tungsten.

96. (New) Grinding media according to claim 88, wherein the grinding media has a density of greater than 8 gm/cc.

97. (New) The method of claim 60, comprising milling the product to a size of less than 100 nanometers.

98. (New) The method of claim 60, comprising milling the product to a size of less than 30 nanometers.

99. (New) The method of claim 60, comprising milling the product to a size of less than 100 nanometers and a contamination level of less than 800 ppm.

100. (New) The method of claim 60, comprising milling the product to a size of less than 100 nanometers and a contamination level of less than 300 ppm.

101. (New) The method of claim 60, comprising milling the product to a size of less than 100 nanometers in at least one dimension.

102. (New) The method of claim 60, comprising milling catalytic particles to a size of less than 30 nanometers.

103. (New) The method of claim 60, comprising milling intermetallic particles to a size of less than 30 nanometers.

104. (New) The method of claim 60, comprising milling titania particles to a size of less than 90 nanometers and a contamination level of less than 100 ppm.

105. (New) The method of claim 60, comprising milling diamond particles to a size of less than 100 nanometers.

106. (New) The method of claim 60, comprising milling semiconductor particles to a size of less than 50 nanometers and a contamination level of less than 200 ppm.

107. (New) The method of claim 60, comprising milling silicon carbide particles to a size of less than 1 micron and a contamination level of less than 600 ppm.

108. (New) The method of claim 60, comprising milling alumina particles to a size of less than 30 nanometers and a contamination level of less than 600 ppm.

109. (New) The method of claim 60, comprising milling tungsten particles to a size of less than 400 nm and a contamination level of less than 900 ppm.

110. (New) The method of claim 60, comprising milling molybdenum particles to a size of less than 400 nm and a contamination level of less than 900 ppm.

111. (New) The method of claim 60, comprising milling cobalt or cobalt nitride particles to a size of less than 5 microns and a contamination level of less than 500 ppm.

112. (New) The method of claim 60, comprising milling metal nitride particles to a size of less than 20 microns and a contamination level of less than 900 ppm.

113. (New) The method of claim 60, comprising milling metal hydride particles to a size of less than 300 nm and a contamination level of less than 900 ppm.